



INTERNATIONAL  
QUALITY  
AWARDS  
2020

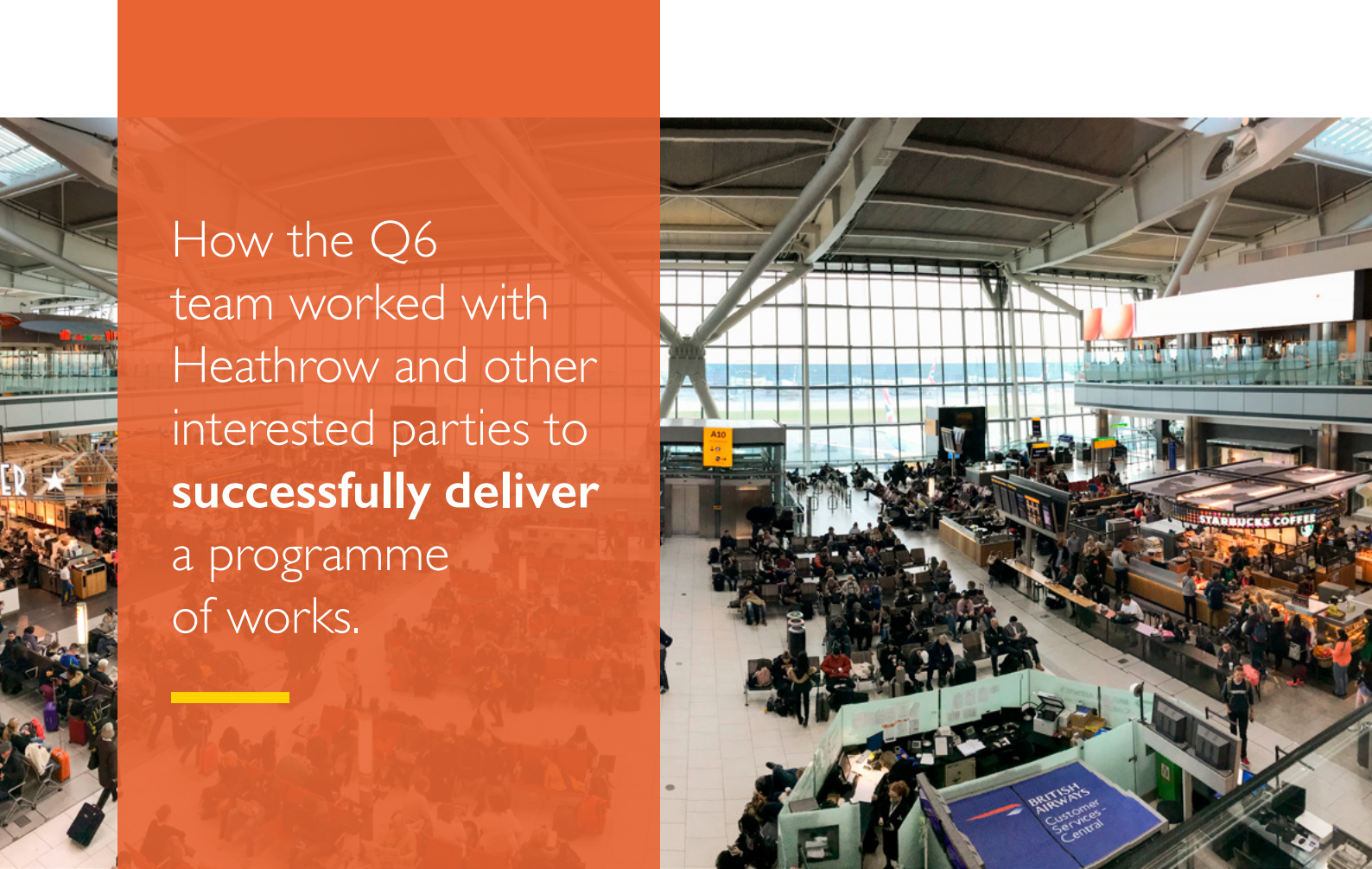
**Ferrovial Construction**  
Finalist | Quality Team of the Year

 CQI |  IRCA  
LEADING QUALITY FOR 100 YEARS

# Case Study

How Ferrovial's  
people deliver great  
project outcomes for  
Heathrow Airport

In partnership with  UKAS



How the Q6 team worked with Heathrow and other interested parties to **successfully deliver** a programme of works.

## **Ferrovial Construction** - Heathrow Project Team

### **LOCATION OF ORGANISATION**

United Kingdom

### **AWARD CATEGORY**

Quality Team of the Year

### **NAME OF AUTHOR(S)**

Paul Simpson

### **PUBLISHED**

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“This was a strong submission that demonstrated significant business benefits along with external recognition. Good integration of the Quality team, along with HSE within Ferrovial’s corporate systems, was demonstrated.”

“The team demonstrated the good application of the quality management principles that helped the team deliver the excellent project outcome of no defects at handover.”

### **JUDGES QUOTE**

**£33.2M**  
savings

**500k**  
hours without a reportable  
accident or injury

**93.8%**  
Strategic Performance KPI



## EXECUTIVE SUMMARY

### The Heathrow Airport Q6 Investment Programme

The Ferrovial Construction Q6 Heathrow Project Team (Q6 team) exists to deliver London's Heathrow Airport Limited (HAL) Q6 capital works investment programme. The customer was looking for maximised efficiency in its capital expenditure, through early contractor involvement (ECI) and designs for optimum, whole-life operating expenditure value.

Ferrovial Construction works alongside HAL and three other Delivery Integrators (DI). Work packages delivered so far include Bravo taxiway realignment to cater for a new fleet of A380 aircraft, the Kilo apron development and other critical infrastructure works.

- Ferrovial Construction was the top-performing contractor in the Q6 programme. The project delivered £33.2m savings through innovation and best practice.
- Ferrovial Construction achieved 93.8% compliance with the HAL strategic performance KPI framework.
- During the project, in one year the team achieved more than 500,000 hours without a reportable accident or injury.
- Through collaboration with other contractors on the T2B stands, Ferrovial Construction achieved industry-leading daily production rates for automatically laid and hand-laid concrete.
- The project is working with industry leaders to develop a new concrete product, which will be used at the airport and will provide excellent temperature performance and flexural strength.



## CONTEXT

Ferrovial Construction's client is London's Heathrow Airport Limited (HAL), which needs no introduction. To operate effectively, Heathrow has to:

- deliver great customer service to its passengers
- ensure flights arrive and depart on time
- keep the airport safe and secure.

Heathrow's contractors play a huge role in achieving this, both in normal operation and while maintaining and upgrading facilities. Ferrovial Construction is responsible as DI for delivering Lot 3 (northern airside and landside) of Heathrow's sixth quinquennium of works (Q6). The construction scope includes upgrading and reconfiguring aircraft stands and taxiways, concrete and asphalt surfacing, building, civil and mechanical and electrical (M&E) works.

The project has to be undertaken in a live, operational environment. Heathrow sits on a complicated web of services, cables and pipes. To carry out the project requires substantial effort to identify, replace and divert services running beneath the works area. An additional challenge was ensuring the safety of those carrying out the work. At the same time, the project had to maintain the continued safe operation of airport services.

When putting together its submission for the CQI's Team of the Year Award, the Ferrovial Construction team at Heathrow decided it had to be for the whole team and not just the Quality department, as everyone in the team contributes to and is responsible for quality.



## HOW QUALITY MANAGEMENT HELPED

The key to the correct implementation of the Quality Management System at Q6 was to understand the client's needs and for the project to push for continuous improvement early on. Ferrovial Construction achieved this by providing innovative solutions, developing new capability, introducing new processes and improved learning. They engaged with HAL early in the work package development phase. This helped to influence designs, achieving efficiencies and ensuring safe buildability.

Every new starter on the project has a two-hour quality induction. This covers the relevant quality processes to increase awareness and promote the right quality culture. At the time of the award submission, the project had inducted more than 200 people, including team members to Q6, HAL, suppliers, client auditors and other stakeholders. Specific training and inductions were also developed for information management, common data environment (CDE) and mobile field quality control tools. The end goal was to ensure that everyone contributed to and was involved in the project.

Ferrovial Construction has previous, extensive experience of working on critical airport systems. The team at Q6 used this experience to develop robust assurance and control plans and processes. The team produced a quality verification plan to introduce control and certification arrangements. HAL recognised how effectively Ferrovial Construction used this plan and asked them to train another contractor on the subject.

2

hours quality induction  
for new starters

200

people inducted

“The team also carries out monthly quantitative cost risk-analysis, using specialist software to undertake Montecarlo simulations.”



## GOVERNANCE

Ferrovial construction uses a robust risk management plan and risk registers. They also consulted all project departments to review risks' probabilities and cost impact. This was a qualitative measure. If required, the team also carries out monthly quantitative cost risk-analysis, using specialist software to undertake Montecarlo simulations.

In line with project and client requirements, Ferrovial Construction establishes a project-specific quality management plan, inspection and test plan (ITP), handover delivery schedule and other project documents. Within the project scope, there were over 220 ITPs, the team reviewed more than 780 materials and delivered 17 projects at Heathrow.

Material approval processes analyse the carbon footprint value to support Ferrovial Construction's certification to PAS 2080 for Carbon Management in Infrastructure. The plan is to use more sustainable materials.

**220+**

Inspection and test  
plan's deployed

**17**

projects delivered

360

handover videos shared

286

NCRs raised

91%

of NCRs closed at time  
of submitting for the IQA



## ASSURANCE

To understand the effectiveness of the systems used on the project, the team carries out several reviews throughout the year and includes them in the project relationship management plan. The plan is part of the Ferrovial Construction ISO44001 certification for collaboration management.

Each month, the project analyses the delivery status, including client satisfaction, client key performance indicators (Q-KPI), handover delivery status, non-conformance (NCR) status, etc. They then submit a dashboard to all heads of department to highlight both the actions to be taken as well as the positive outcomes.

Due to Covid-19 constraints, the team at Q6 has made use of a remote handover process (done with 360 videos and shared in a virtual site visit), which increases transparency to the client at handover.

These control and assurance processes directly led to projects being delivered right first time. Raising NCRs at the right time and acting on them correctly provided learning opportunities. The team raised 286 NCRs and, at the time of submitting for the IQA had closed 91% of them. They also significantly reduced the number of post-handover defects. On several projects, there were no defects at all after handover.

In the lead up to the IQA submission, Ferrovial Construction achieved project handovers to the client ahead of time and with all certification documents submitted and approved by the client. In January 2019, Ferrovial Construction received recognition with the award of a HAL Quality 'Oscar' for the 'Right First Time' handover of airfield stands at Heathrow. This included a complete assurance pack of all the documentation the client required.

“Ferrovial Construction achieved project handovers to the client ahead of time and with all certification documents submitted and approved by the client.”



## IMPROVEMENT

The team looked for improvement opportunities by analysing data and asking for feedback from the client, stakeholders, suppliers and the project team.

In 2019, Ferrovial Construction had an average of 97% in its client satisfaction surveys from HAL. HAL awards quality 'Oscars' each year for contractors who have delivered an excellent performance.

In October 2019, the team was awarded a HAL Oscar. This was for the first HAL audit in the Heathrow Q6 project where no CARs were raised. The team's project was Self-Certification of Design.

Ferrovial Construction uses the knowledge hub as an online portal for all staff and as a means to brief team members and to engage with them. These 'lessons

learned' can be accessed by the entire Ferrovial Construction business and its joint ventures and they are also embedded in all ITPs. All relevant project data is hosted on the portal. The team at Q6 recognised the importance of data management for the project and tied in data from digitised records to support its Building Information Modelling (BIM) with software to make these records available through the lifecycle of the project. The parent company is ISO 19650 certified for its BIM.

The team innovated by using drones at Heathrow to record the initial status of the client's infrastructure as an input into the design. The drones were also used to monitor construction progress. This was recognised by HAL with an innovation award.

**97%**

average client  
satisfaction score



## LEADERSHIP

The Ferrovial Construction team at Q6 set out to improve quality culture through increased leadership engagement. They carried out over 140 engagement events in 2019 and these continued in 2020 up to the time of the award submission. There was a range of events:

- **Quality circles** – to improve current processes for a specific activity.
- **CQI's World Quality Day** – which the team celebrated with HAL and other contractors.
- **Monthly toolbox talk sessions/‘Quality Alert’ sessions** – run by the leadership team for the workforce and project teams.
- **Regular staff discussions** – on quality and other processes, which helps with employee engagement.

This approach is best summarised with ‘People deliver projects’. All the events are key to ensure that the Ferrovial Construction culture is set from the moment an employee starts. The team at Q6 is looking to embed a culture of doing the right thing and ensuring ‘right first time’ delivery. Ferrovial Construction developed the quality training and development plan with the support of the CQI.

In November 2019, Ferrovial Construction received another HAL Oscar for the effectiveness of the culture. This time the award was for a major project milestone: the completion of excavation works with high quality standards and ahead of schedule. Heathrow’s CEO (pictured below) was involved in celebrating this achievement.







Look out for the CQI webinar featuring the Ferrovial Construction team at Q6 talking about how they won the award.



Look out for the CQI webinar on submitting an award for the 2021 IQA.



Take the CQI Quality in Construction course – this course has been developed in partnership with the CQI's Construction Special Interest Group (ConSig).



Take the Managing and Influencing Stakeholders course.



## KEY TAKEAWAYS

- **People deliver projects** – the human factor is vital in delivering superior outcomes for clients and stakeholders.
- **Superior outcomes** – Achieving exceptional results requires detailed planning and continuous effort.
- **Risk-based assurance** – Developing an assurance programme based on identified risk ensures the programme works effectively and meets customer needs and expectations.
- **Early engagement** – Engagement with the customer and other key stakeholders is vital to develop effective collaboration and guarantee successful programme delivery.
- **Process management** – End-to-end management of core processes ensures consistent, effective delivery of performance.
- **Communications and engagement** – By providing a range of people-focused events, organisations can increase effective communication within the programme, leading to employee and contractor engagement, better understanding and process improvement.
- **Leadership** – Good leadership in quality across the project, from the perspective of the client and of the supply chain, can build a sound quality culture.

**The Chartered Quality Institute**

Third floor, 90 Chancery Lane,  
Holborn, London, WC2A 1EU

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